

own lines of manipulations. I dare say you will not find one surgeon who is conversant with the fundamentals of physical therapy, or even what function may be restored in a given case.

Now, we will discuss occupational therapy. This theoretically begins as soon as the patient is out from under his anaesthetic. It is desirable to keep his mind and his hands busy at occupations compatible with his strength. It keeps him from finding time to count the fly-specks on the ceiling and the metaphorical fly-specks on everything coming in contact with him. The more nearly complete is the consumption of the patient's time, the more the benefit.

In the Massachusetts General Hospital, a recent investigation, the character of which I may not divulge, has shown that the system embracing occupational therapy, physical therapy and work treatment has developed a pecuniary saving of approximately one-third, besides more quickly rehabilitating and more completely rehabilitating the injured. I might say in this connection, that the experience of the Massachusetts General Hospital was not confined to injury cases, but a saving in time and money was developed through the work treatment in ordinary medical and surgical cases. You are familiar with this subject, the bed-side work, the war work, the shop work. But it requires specially-trained aides to do this work. In all of this phase of treatment there is too much tendency to employ makeshifts. If you are going to establish a physical and occupational therapeutic unit, get expert advice. Get expert technicians and aides. Don't get those untrained to their duties and try to adapt them. The rightly-chosen woman can produce ten times as good results as some ready-made, strong-arm man.

There is a host of details I might go into and illustration I might take up. This must be omitted.

I would especially emphasize the subjects of:

Physical examination in selected cases.

Making use of the Industrial Accident Commission for information.

X-Ray examination in possible bone injury.

Function more important than appearance.

The restorative and adaptive power of nature.

Encouragement of frankness in dealing with the injured.

Suggestion, good and bad.

Humanity to expedite all work.

Physical therapy by experts selected for proper qualities.

Necessity for guidance in physical therapy.

Pecuniary saving through therapeutic measures.

The extraordinary effectiveness of physical therapy if properly applied.

BILATERAL NEPHROLITHIASIS.*

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Recent reports by various observers of the incidence of bilateral nephrolithiasis are very much in agreement. Braasch¹ reports sixty-two cases among five hundred and sixty-six operations for

calculus, a percentage of 12.3. Israel,² in an exhaustive monograph on kidney and ureter stones, reports sixty-four cases among five hundred and seventy-two operations, or 11.2 per cent.

Our data includes forty-two cases of nephrolithiasis of all types. Of these, ten were bilateral, a percentage of 23.8. If reduced to the proportion operated it becomes 29.4 per cent. It is interesting to compare these figures with those quoted by Krotoszyner³ in 1909, in which he reports three cases but gives no statistics of his own. He quotes Israel's⁴ figures at that time as 27 per cent.; Watson's,⁵ 30 per cent.; Kummell's,⁶ 30 per cent.; Kapsamer's,⁷ 18 per cent. at operation and 30 per cent. at autopsy. It seems strange that with the more crude methods of diagnosis at that time, that the incidence should be greater; one would be inclined to accept the autopsy figures as accurate, against which the argument is made justly that, with our improved methods of diagnosis and treatment, fewer cases of bilateral nephrolithiasis come to autopsy now than at that time. Thirty-two of our patients were males, ten females; the youngest was twenty-two, the oldest eighty-two; the average age forty-three years. Duration of symptoms ranged from two days to thirty-five years. The location of stones was on the right side in fourteen, on the left side in sixteen, bilateral in ten, one of which was a horseshoe kidney. In two cases the stones were found in the bladder, whither they had descended.

Symptomatically, bilateral nephrolithiasis does not differ in any essential detail from unilateral; in fact, in none of the cases reported was the double involvement suspected at the start, and it was usually a matter of surprise to learn that we were dealing with involvement of both kidneys.

DIAGNOSIS

A carefully prepared history is the first step to diagnosis, and though it is not sufficient in itself to draw conclusions, it establishes clues upon which one formulates theories. Ochsner⁸ goes so far as to say: "The most important element in the diagnosis is a carefully-written history taken by the surgeon himself."

In reviewing these cases occurring over a period of years, we were struck by the different conceptions of internes and others as to what constitutes a "history." Some, taken by good men, while adequate for the case in question, were almost valueless for the purpose of statistics. In genito-urinary work, which can be standardized within certain limits, we find it desirable to use a chart form in which certain recurrent symptoms are so arranged that tabulating is rendered easy. For instance, our chart provides spaces covering "Frequency of urination; day—night: Pain; when—before—during—after: Blood; bright—mixed" and so forth. It has been contended that filling out blanks is a lazy man's way of taking a history, but when one is compiling the data for study, it is certainly easier than to wade through pages of wretched writing to get at essentials.

SYMPTOMS

The symptoms of renal calculus are striking to one used to interpreting them, and though the novice will frequently attribute those of other origin to the kidneys, true renal calculi set up a

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syndrome of their own which seldom leads to error. Mistakes in diagnosis will happen, however. In our series, four patients had previously been operated for "appendicitis" and two for "salpingitis." One had had three laparotomies successively for "appendicitis," "salpingitis" and "adhesions" by two very capable surgeons. This, however, is not always the fault of the surgeon. Braasch¹ reports an instance in which the patient complained of gastric symptoms only, and was operated for acute duodenal ulcer. It is essential in formulating a diagnosis to take into consideration all of the refinements of detail and technic at present available, and to verify all data to the point of exclusion. Only by so doing can one approach the final conclusion with the full moral preparation to proceed.

In this series the patient's presenting complaint was sometimes illuminating: twenty-seven complained of pain; five of haematuria; six of difficult and frequent urination; two of "kidney trouble"; one of rheumatism, and one of "stone in the kidney." Studying the pain further, it was found on the affected side in twenty-one instances; in the back in five; in the penis, bladder and opposite side each in one. Radiation of pain was noted in over one-third of the cases. It was mentioned as radiating to the thigh and groin, testicle, bladder, forward, and once to the opposite side. Twenty had one or more attacks of true renal colic. Urinary frequency was increased in twenty-six cases, 61 per cent.; during the day, in six cases; at night, in two, and both day and night in eighteen. While blood was found microscopically at some time in practically all the cases, it was visible to the patient in only twelve instances. Physical examination rarely adds positive findings, but is of value in excluding other conditions. Occasionally a kidney was palpable, but not more frequently than the average. Unless the kidney be markedly enlarged, it is not apt to be felt and a patient who has just gone through an attack of renal colic is not very apt to relax his abdominal muscles sufficiently to enable one to feel much. In most cases where the kidney was palpable it was in women, and it was as frequently felt on the opposite side as on the affected one.

Cystoscopic findings differed; they were negative in the majority of cases, twenty-three, or 54 per cent.; 46 per cent. showed a variation from an appearance of edema of the ureteral orifice or a patulousness and congestion, to actual discharge of blood and pus. In one instance a stone was seen impacted in the ureteral orifice. One case showed a marked cystitis. Ulceration of the bladder mucosa was never seen, a point for differentiation from tuberculosis. In general, cystoscopic findings beyond a patulous ureteral meatus are not especially illuminating. Functional tests showed reduced activity on the affected side in all unilateral cases, sometimes to the point of complete absence of secretion. All of these showed a marked improvement after the removal of the stone.

The diagnostic feature par excellence, however, was the radiogram. We prefer to study our cases previous to making the X-ray. Having them diagnosed by others takes away the incentive to work and one is apt to lean too heavily upon the ra-

diologist. Twenty-nine of the cases, or 69 per cent., were confirmed by the X-ray. In four which were not found by X-ray the subsequent passage of stones confirmed the diagnosis; two additional cases were confirmed by operation.

Proper preparation is essential for good radiograms. Every radiographer has his own methods, which range from nothing at all to very elaborate cleansings of the alimentary tract. We get very good results by giving half an ounce of castor oil on the morning and evening of the day before, clear fluids with no milk that day, and no breakfast on the day the plate is made. No enemas are given as they tend to form gas. It is quite possible to get good pictures without any preparation in individuals not too stout, but it is a great disappointment when the plates are developed to find the bowel full of fecal matter or gas; hence we prefer a standard preparation. Regardless of the location of symptoms, no X-ray is adequate which does not include the entire urinary tract. This was especially borne out in the experience with the bilateral involvements. Neither is any X-ray good which does not show the usual structures, bony and soft, especially the psoas muscles.

Pyelograms do not aid much in diagnosis, but are of value in determining the amount of renal destruction and the type of operation advisable. It is a rule not to inject a kidney if there be an obstruction beyond which a catheter cannot pass. The solution is apt to be retained, causing much pain and possible renal destruction. After making a pyelogram, if any large amount of fluid has been used, it is customary to wash it out with sterile water or normal salt solution. Many of the unfavorable reactions due to pyelography, some of which are mentioned by Kretschmer,⁹ have been overcome by the use of the alkaline halogen solutions and the gravity method and there is no objection to this manoeuvre, when indicated. Wax-tipped catheters are of more value in stone in the ureter than in the kidney, but one must be careful that the scratch does not come from the instrument itself.

Twelve patients passed stones either spontaneously or by manipulation; seventeen were operated; of these seven had pyelotomies; one, ureterotomy; nine, nephrectomies. The last because there had been so much renal destruction that it was impossible to save the kidney.

SUBSEQUENT HISTORY

One patient died of anuria following bilateral pyelotomy in a horse-shoe kidney, an operative mortality of 2.3 per cent.; two died of intercurrent disease; three were improved; twelve were cured; one, not operated, who passed two stones spontaneously, subsequently developed a bilateral pyelitis; and one (No. 5 below) returned with stones in the opposite kidney and ureter. Twelve reported no return of symptoms; twenty-two could not be traced; one who returned complaining of pain in the remaining kidney showed a compensatory hypertrophy, but no sign of stone.

In the ten bilateral cases, including one horse-shoe kidney, all were males. The age ranged from twenty-two to fifty-six, the average being thirty-five years. All complained of pain in the back, three also having pain in the left side. In two

instances it radiated to the bladder; colic was present in four. Increased urinary frequency was present in all cases. Blood was present macroscopically in two. In all patients the diagnosis was confirmed by X-ray. Five were operated; there was one nephrectomy and four pyelotomies.

Choice of operation in bilateral lithiasis must be based upon the general status of the case; while in general the advice is valid to operate upon the better side first, it is not always feasible. Case No. 1 had bilateral stones and pyuria and a chronic cowperitis. As his symptoms were all referred to the left side, this was operated, though the poorer of the two. Subsequent examination of segregated urines showed the operated side free from pus. The opposite side is still to be operated. Case No. 2 showed a silent stone at the lower pole of the right kidney and a very large one in the left pelvis; also a markedly enlarged kidney and pelvis on this side. Cystoscopy was almost impossible on account of the gushes of pure pus from the left ureter. The diagnosis was bilateral nephrolithiasis with left pyonephrosis. The patient was urinating hourly day and night, his symptoms had been present for twenty-five years, and he was a nervous and physical wreck. Had the better side been operated, the opposite kidney would not have been adequate for carrying on the renal function. Upon exposure, the left kidney was found to be a huge pus sac filled with stones and it was removed. The patient is in splendid condition and will go on indefinitely with his one silent stone. He has a few blood cells and a good amount of albumen in his urine. Should it become necessary to operate upon his one remaining kidney he is a better risk now than before his first operation. It is interesting to note that two of his sisters in a family of nine have a history of calculi.

Case No. 4 is quite a fat man who has large stone shadows on both sides. He has a marked pyuria with moderate frequency. Judging from the pictures, there is a large amount of renal destruction on both sides and one would hesitate to interfere. He is fairly comfortable and reports occasionally for X-rays. The stones are increasing in size slowly.

Case No. 5 is interesting in that the patient came in originally in 1915, when a diagnosis of left renal calculus was made. He refused operation and was lost sight of until last week, when he came in again, this time complaining of pain on the left side, radiating to the right. Cystoscopy found the right catheter impeded about six centimeters above the uretero-vesical junction. The X-ray showed three shadows like a rosary at that point. There is also a shadow the size of a hazel nut in the pelvis of the same side. A large shadow completely fills the pelvis and calyces on the left side. There is an anuria on the right side and a pyuria on the left; attempts to dislodge the stones in the ureter show some success. If there is a real anuria present on the right side it will be essential to work quickly. An interesting complication is a skin disease which has accompanied his four attacks of typical colic. This varies from a simple peeling of his hands to a desquamation of almost his entire body.

Case No. 6 has a left nephrotomy in 1905, and though X-rays in 1915 showed large calculi in the right side and ureteral catheterization showed no urine on the left, the patient was quite comfortable at his last appearance.

The remaining cases present nothing of especial interest. Hollander¹⁰ accounts for the formation of bilateral calculi by a paralysis of the renal pelvis and ureter following injuries of the spinal cord. Careful study of our bilateral cases failed to elicit any history of trauma.

SUMMARY

1. Bilateral nephrolithiasis does not differ essentially in history and symptomatology from unilateral.

2. The taking of a careful history is the first essential to the proper study of the case.

3. The symptoms of renal calculus are frequently misinterpreted, hence the necessity of correlating all findings.

4. Pain is a constant symptom, varying from a dull ache to colic; radiation of pain is the most suggestive.

5. Frequency of urination was the most common symptom.

6. Physical examination is of most value in excluding other conditions.

7. Cystoscopic findings are not striking.

8. Function is usually depressed on the affected side.

9. The X-ray gives the best evidence, but is not infallible.

10. It is important to have proper preparation for X-rays and to take the entire urinary tract.

11. There is no objection to a pyelogram if the shadow casting fluid can be drained off.

12. In bilateral involvement, the better side is usually operated first, unless distressing symptoms are coming from the poorer side.

13. Patients with large calculi on both sides may do well if left alone.

14. The fact that some individuals are calculus formers suggests caution in operating and a guarded prognosis.

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URINARY INCONTINENCE AND ITS OPERATIVE REPAIR.*

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Incontinence of urine results from inability of the sphincters to prevent the involuntary escape of urine from the bladder. There are a number of persons having varying degrees of urinary incontinence due to spinal cord diseases, tuberculosis and traumatic lesions, who are forced to

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